Zeeospheres™
ceramic microspheres

Use of Zeeospheres™ Ceramic Microspheres to Improve Corrosion Resistance

Introduction

In most coatings, use of Zeeospheres™ Ceramic Microspheres can improve corrosion resistance. A major resin producer conducted a study to determine the effect of incorporating Zeeospheres ceramic microspheres in their coatings on corrosion resistance.

A water reducible epoxy primer formula was used in this study. To accentuate the effect of the Zeeospheres™ Ceramic Microspheres, a relatively weak binder was employed. Results of the resin producer's study are shown in the table, but highlights worth noting include:

1. In general, increasing levels of Zeeospheres ceramic microspheres produced coatings with increasing corrosion resistance.
2. Not until very high loadings of Zeeospheres ceramic microspheres were reached (3.85 lbs/gal–or a PVC of 45%) did the trend toward improved corrosion resistance begin to reverse.
3. Increasing levels of Zeeospheres ceramic microspheres also produced:
   - Reduced RMC's
   - Higher PVC's and solids
   - Little increase in viscosity
4. Compared to equivalent volumetric loadings of other low oil absorption extenders like barium sulfate*, results with Zeeospheres ceramic microspheres showed:
   - The data below show a 3X increase in hours to failure in the salt spray cabinet
   - Lower weight per gallon
   - Reduced RMC

*See results for formula 8 vs. formula 5

Comparison of Zeeospheres™ Ceramic Microspheres G-200 vs. Barytes in a Two-Part, Water-Based Corrosion Inhibitive Primer

Panel		1	5	6	7	8	9
Formulating Constants							
PVC		30.4	40.2	30.4	34.9	40.0	45.0
Application Solids		41.3	41.4	41.6	44.3	45.0	44.8
AB Application Solids		80	80	80	80		
Part A							
Pb Sil		100	100	100	100	100	100
Part B							
Fe Ox		125	125	125	125	125	125
Zeeospheres Ceramic Microspheres G-200				150	211	291	385
Salt Spray Results On 2 Mil Films Over Bonderite 1000 Panels (ASTM B 117)							
Hours to Failure		168	336	504	504	504	504
Observations: ASTM D 714							
Field	Blisters	8MD	4VD	8F	8M	8F	8D
Scribe	Blisters	8MD	4VD	8F	8M	8F	8D
	Rust	Trace	Pronounced	Definite	Definite	Definite	Definite
	Creep	4	3	7	4	2	2
Overall Ranking of Salt Spray performance		6	5	4	3	1	2

Why do Zeeospheres™ Ceramic Microspheres improve corrosion resistance?

Zeeospheres™ Ceramic Microspheres are not a corrosion inhibitive pigment. It is believed that their effect on corrosion resistance results from their packing and resulting reduction in film permeability. In addition, their high loading potential allows use at levels high enough to reinforce weaker resins without creating the viscosity or physical property problems normally associated with very high PVC's.

Product Safety and Handling

Please read and follow the precautions and directions for use on the product label and on Material Safety Data Sheets available from Zeeospheres Ceramics, LLC, (985) 532-2541, www.zeeospheres.com.

129 Valentine Dr. • Lockport, Louisiana 70374
985.532.2541 • www.zeeospheres.com